

REMARKS

By this amendment, claims 1 and 22 have been amended. Thus, claims 1, 3-14 and 22-28 are now active in the application. Reexamination and reconsideration of the application are respectfully requested.

In items 1-7 on pages 2-6 of the Office Action, claims 1, 3, 4 and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. (WO 94/09684) in view of Mitsunaga et al. (JP 3-145089); claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. in view of Mitsunaga et al. and further in view of Gessler et al. (U.S. 2004/0074589); claims 7-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. in view of Mitsunaga et al. and further in view of Rowland (U.S. 2,732,479); claims 11, 13 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. in view of Mitsunaga et al. and Rowland and further in view of Peeri (U.S. 4,063,069); claim 12 was rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. in view of Mitsunaga et al. and Rowland and further in view of Moss (U.S. 6,311,637); and claims 22-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Liviken et al. in view of Mitsunaga et al. and further in view of Kayama (JP 03-015412).

These rejections are respectfully traversed in part, and are believed clearly inapplicable to the claims as presently presented, for the following reasons.

With exemplary reference to the drawing figures, independent claim 1 now sets forth a heated seat assembly comprising: a seat surface material 14; a heating element 1 fixed inside the seat surface material 14, the heating element 1 consisting of one sheet of base material 3 made of a hotmelt material, and a linear heater 2 disposed on the base material 3 and being sewn to the base material 3 with no adhesive being interposed between the base material 3 and the linear heater 2 to secure the linear heater 2 to the base material 3; and a resin 15(8) filled inside of the seat surface material 14 and covering the heating element 1; wherein the linear heater 2 is fixed to an inside of the seat surface material 14 by the hotmelt material 3.

Thus, in accordance with independent claim 1, the heating element of the present invention is a very simple structure. That is, the heating element 1 consists only of one sheet of base material 3 and a linear heater 2 sewn to the base material 3. No adhesive is required between the base material

and the linear heater, and no additional sheets of base material or other material are part of the heating element 1.

Similarly, again with exemplary reference to the drawing figures, independent claim 22 sets forth a method of manufacturing a heated seat assembly, comprising: comprising a seat surface material 14; preparing a heating element 1 consisting of one sheet of base material 3 and a linear heater 2 sewn to the base material 3 with no adhesive being interposed between the base material 3 and the linear heater 2 to secure the linear heater 2 to the base material 3, the base material 3 being a hotmelt base material; filling and curing resin 8,15 inside of the seat surface material 14 so as to cover the heating element 1; and fixing the heating element 1 inside the seat surface material 14 by fixing the linear heater 2 to an inside of the seat surface material 14 by hot-melting of the hotmelt base material 3 during said filling and curing.

In contrast to the present invention as defined in claims 1 and 22, the Liviken publication specifically discloses that the heating element 1 is formed of a heating loop 2 sandwiched between a pair of foil layers 3,4 (see page 3, lines 5-14 and Figs. 1 and 2, for example). The heating loop 2 is fastened to at least the lower foil layer 3 by a bonding agent, such as a layer of glue, which is also effective to adhere upper foil layer 4 to the lower foil layer (see page 4, lines 11-13). Such a heating element must be assembled, for example, by a device such as illustrated in Fig. 6 of the Liviken document. On the other hand, the very simple structure of the heating element according to the present invention allows for a simple, inexpensive production process and results in a finished seat that provides a good seating feel without stiffness.

Furthermore, the claims specify that a resin 8,15 is filled inside of the seat surface material 14 so as to cover the heating element. In contrast, in the Liviken et al. publication, an elastic body 9 (referred to as elastic body 23 on page 11 of the Liviken et al. specification) is placed into the mold so that a balanced pressure can be applied against the layers 3,4 and the heating element 2 by the pressure 15 (Fig. 7) against the thrust plate 14 (referred to as thrust plate 21 on page 11 of the Liviken et al. specification). Thus, contrary to the present invention, the “resin” 9 of the Liviken et al. publication constitutes an elastic body placed into the mold, not a resin filled into the seat surface material to cover the heating element.

In item 7 on pages 5 and 6 of the Office Action, the Examiner cited the Kayama reference for teaching “filling urethane foam resin inside a seat surface, the filling being foaming injection molding (see abstract).” However, although it is true that Kayama discloses the filling in of resin (urethane) solution 24 into a mold 22 to cover the heater mat 16, a person having ordinary skill in the art would clearly not have been motivated to modify the arrangement of the Liviken et al. publication in view of the Kayama teaching.

Specifically, at lines 4-17 of page 11 of the Liviken et al. publication, it is described explicitly that the elastic body [9] is placed into the mold and a balanced pressure is applied by means of the thrust plate [14], and that the purpose of this procedure is to press the elastic body 9 against the layers 3,4 and the intermediate heating element 2, prior to heat being introduced by hot air via the air ducts 25 to melt the glue foil 3 or 4. If, as the Examiner has suggested, the Liviken et al. arrangement was modified in view of the Kayama reference to fill a urethane solution 24 into the mold instead of placing the elastic body 9 into the mold as shown in Liviken’s Fig. 7, it would not be possible to apply the balanced pressure to the layers 3,4 and the intermediate heating element 2 by pressing the thrust plate 14 against the elastic body 9.

Accordingly, it is submitted that the Liviken patent actually teaches away from the modification suggested by the Examiner of having the Liviken et al. arrangement modified in view of the Kayama reference to utilize a resin solution being filled into the mold. If, to meet the limitations of the claim, a device in a prior art reference would have to be modified in such a manner that “it would be rendered inoperable for its intended purpose,...[then] [i]n effect, [that reference] teaches away from the... proposed modification.” In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed.Cir. 1984). Also see W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed.Cir. 1983), cert. denied, 469 U.S. 851 (1984), (“a prior patent must be considered in its entirety, including portions that would lead away from the invention in suit.”).

Furthermore, the Liviken reference discloses the procedure of fixing the heating element to the upholstery layer 7 using melting of the film 3 heated by hot air blown through the air ducts 25. Thus, the melting of the adhesive film 3 is caused by the introduction of hot air. Liviken does not disclose or suggest that the adhesive film is melted during filling and curing of the resin, as

specifically stated in claim 22, and as described in the original specification at page 6, lines 15-17, for example.

Furthermore, it is noted that the Liviken et al. reference describes (at page 11, lines 18 and 19) that “during this heating stage the airflow is facilitated by the heating element being air-permeable.” This disclosure of the Liviken et al. publication shows that Liviken contemplates the continuous flow of heating air through the air-permeable heating element, and does not contemplate filling the inside of the seat surface material with resin, nor melting of the adhesive film by the heat of the filling and curing resin.

The Examiner cited the Gessler publication for disclosing “securing a fiber to a substrate by sewing with hot melt material,” and cited the Rowland patent for disclosing a “heater having a braided structure with a plurality of conductors and threads and a number of threads being not less than the number of conductors,” and cited the Peeri patent for disclosing “a heating element having coating layers of polytetrafluoroethylene, which is considered to be a lubricant,” and cited the Moss patent for disclosing that it is conventional in the art for an insulating coating layer to be colored for indication.” However, these references provide no teaching or suggestion that would have obviated the above-discussed shortcomings of the Liviken, Mitsunaga and Kayama references.


Therefore, for the above-discussed reasons, it is believed apparent that a person having ordinary skill in the art would not have been motivated to modify the Liviken et al. arrangement in such a manner as to result in or otherwise render obvious the present invention of either of the independent claims 1 and 22, in view of the Mitsunaga et al. and Kayama references, or to make any combination of the references of record in such a manner as to result or otherwise render obvious the present invention of claims 1 and 22. Therefore, it is respectfully submitted that claims 1 and 22, as well as the claims depending therefrom, are clearly allowable over the prior art of record.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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